AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A connection controller for a network comprising a plurality of first stage switches, a plurality of second stage switches coupled to each of the plurality of first stage switches, and a packet source coupled to the plurality of first stage switches and configured to request a traffic pattern for a packet, the connection controller comprising:

a network topology cache capable of being coupled to the network and configured to receive network topology data ~~of a~~ from the network;

a packing algorithm ~~coupled to~~ circuit coupled to the network topology cache and capable of being coupled to the packet source, the packing algorithm circuit configured to:

receive the network topology data from the network topology cache,

receive ~~a requested~~ the traffic pattern request ~~of a packet~~ from the packet source, and ~~wherein the packing algorithm computes~~

compute an actual traffic pattern ~~using the~~ for the packet based on the received network topology data and the ~~requested~~ received traffic pattern request, wherein the actual traffic pattern comprises one of the plurality of first stage switches and one of the plurality of second stage switches such that the network ~~operates~~ is able to operate as a strictly non-interfering network; and

a logical network state entity coupled to the packing algorithm circuit and capable of being coupled to the packet source, the logical network state entity configured to communicate the computed actual traffic pattern to [[a]] the source, ~~corresponding to the packet.~~

2. (Currently Amended) The connection controller of claim 1, wherein the connection controller ~~calculates~~ is configured to calculate a plurality of routing trees ~~for a~~ including the plurality of first stage and second stage switches, ~~in the network,~~ wherein the connection controller calculates a plurality of Destination Location Identifiers ~~(DLID)~~ (DLIDs) and a set of forwarding instructions for each of the plurality of first stage and second stage switches, wherein ~~each of~~ the plurality of DLIDs ~~corresponds~~ correspond to one of the plurality of routing trees and one of a plurality of destinations in the network, and wherein the connection controller populates a forwarding table of each of the plurality of ~~InfiniBand~~ first stage and second stage switches with the plurality of DLIDs and the set of forwarding instructions.

3. (Currently Amended) The connection controller of claim 1, wherein computing an actual traffic pattern comprises executing a rearrangement algorithm and assigning one of a plurality of Destination Location Identifiers ~~(DLID)~~ (DLIDs) to the packet such that the network operates as a strictly non-interfering network.

4. (Currently Amended) The connection controller of claim 3, wherein the packet follows a path through ~~at least a portion of a~~ the one of the plurality of first stage switches ~~in the network~~ and the one of the plurality of second stage switches, and wherein ~~each of the portion of the plurality of switches~~ the one of the plurality of first stage switches and the one of the plurality of second stage switches forwards the packet according to the one of the plurality of DLIDs assigned to the packet such that the network operates as a strictly non-interfering network.

5. (Currently Amended) The connection controller of claim 4, wherein ~~each of the portion of the plurality of switches~~ the one of the plurality of first stage switches and the one of the plurality of second stage switches each looks up the one of the plurality of DLIDs assigned to the packet in a forwarding table ~~at each of the portion of the plurality of switches~~ within the one of the plurality of first stage switches and the one of the plurality of second stage switches.

6. (Currently Amended) The connection controller of claim 4, wherein ~~each of the portion of the plurality of switches~~ the one of the plurality of first stage switches and the one of the plurality of second stage switches forwards the packet in accordance with the one of the plurality of DLIDs assigned to the packet as found in a forwarding table at each the portion of the plurality of switches.

7. (Currently Amended) The connection controller of claim 1, wherein the network is a ~~Clos~~ CLOS network.

8. (Currently Amended) A connection controller for a network comprising a plurality of first stage switches including a forwarding table, a plurality of second stage switches including a forwarding table and coupled to each of the plurality of first stage switches, and a plurality of nodes coupled the plurality of first stage switches, the connection controller comprising a computer-readable medium containing computer instructions for ~~instructing~~ a processor that, ~~to perform a method of populating a forwarding table, the instructions comprising~~ when executed by the processor, cause the processor to perform a method comprising the steps of:

calculating a plurality of routing trees, ~~for a~~ each routing tree comprising the plurality of ~~InfiniBand~~ first stage switches, and one of the plurality of second stage switches; ~~in a network;~~

~~calculating a plurality of~~ assigning a Destination Location ~~Identifiers~~ Identifier (DLID) to each routing tree and to each node; ~~and~~

calculating a set of forwarding instructions for each of the plurality of first stage switches and each of the plurality of second stage switches based on the assigned DLIDs, ~~wherein each of the plurality of DLIDs corresponds to one of the plurality of routing trees and one of a plurality of end nodes and~~ wherein the set of forwarding instructions ~~create paths appropriate to make~~ causes the one of the plurality of first stage switches and the one of the plurality of second stage switches in each routing tree to operate in a manner that creates a path between each of the plurality of nodes; and ~~the network operate as a strictly non-interfering network; and~~

populating the forwarding table of each of the plurality of first stage switches and the plurality of second stage switches ~~in the network~~ with the ~~plurality of~~ assigned DLIDs and the set of forwarding instructions.

9. (Currently Amended) The connection controller of claim 8, wherein the network is a ~~Clos~~ CLOS network.

10. (Currently Amended) The connection controller of claim 8, wherein each of the plurality of ~~end~~ nodes comprises a destination, and wherein the destination is identified by a BaseLID.

11. (Currently Amended) The connection controller of claim 8, wherein each of the plurality of second stage switches comprises a spine node, and wherein calculating the plurality of routing trees comprises, for each spine node in the network, calculating a shortest path from ~~the~~ each spine node to each of the plurality of ~~end~~ nodes.

12. (Currently Amended) The connection controller of claim 8, wherein each of the plurality of second stage switches comprises a spine node, and wherein each of the plurality of routing trees further comprises ~~at least a portion of the plurality of switches and corresponding~~ a plurality of links that form a shortest path from ~~one of the plurality of end nodes~~ each end node to [[a]] each spine node, ~~of the network.~~

13. (Currently Amended) A ~~connection controller comprising a~~ computer-readable medium containing computer instructions for instructing a processor to perform a method [[of]] for forwarding a packet from [[,]] ~~wherein the packet is created at~~ a source node ~~and is addressed~~ to a destination node assigned a Destination Location Identifier (DLID) within a network comprising a plurality of first stage switches assigned a respective DLID, and a plurality of second stage switches coupled to each of the plurality of first stage switches and assigned a respective DLID, wherein a first switch of the plurality of first stage switches is further coupled to the source node and a second switch of the plurality of first stage switches is coupled to the destination node, the computer instructions, when executed by the processor, cause the processor to perform a method comprising the steps of:

~~executing a rearrangement algorithm for the network;~~

~~assigning one of a plurality of Destination Location Identifiers (DLID) to~~ associating the destination node DLID with the packet; and

routing the packet ~~following~~ along a path through ~~at least a portion of a~~ the first switch of the plurality of first stage switches, one of the plurality of second stage switches, and the second switch of the plurality of first stage switches ~~from the source~~ to the destination based on the first switch DLID, the DLID of the one of the plurality of second stage switches, and the second switch DLID, wherein ~~each of the portion~~ the first switch of the plurality of first stage switches, the one of the plurality of second stage switches, and the second switch of the plurality of first stage switches forward the packet according to the ~~one of the plurality of DLIDs assigned to~~ destination node DLID associated with the packet ~~and wherein~~ such that the network operates as a strictly non-interfering network.

14. (Canceled)

15. (Currently Amended) The connection controller of claim 13, wherein the network is a ~~Clos~~ CLOS network.

16. (Currently Amended) The connection controller of claim 13, wherein routing the packet ~~following the path~~ comprises looking up the ~~one of the plurality of DLIDs assigned to~~ destination node DLID associated with the packet in a forwarding table [[at]] within each of ~~the portion of the plurality of switches~~ the first switch of the plurality of first stage switches, the one of the plurality of second stage switches, and the second switch of the plurality of first stage switches along the path from the source node to the destination node.

17. (Currently Amended) The connection controller of claim 13, wherein ~~the packet following the path~~ routing step comprises ~~each of the portion of the plurality of switches forwarding~~ the step of routing the packet in accordance with the ~~one of the plurality of DLIDs assigned to~~ destination node DLID associated with the packet as found in a forwarding table [[at]] included within each of ~~the portion of the plurality of switches~~ the first switch of the plurality of first stage switches, the one of the plurality of second stage switches, and the second switch of the plurality of first stage switches.

18. (New) The connection controller of claim 1, wherein each of the plurality of first stage switches is an INFINIBAND switch and each of the plurality of second stage switches is an INFINIBAND switch.

19. (New) The connection controller of claim 8, wherein each of the plurality of first stage switches is an INFINIBAND switch and each of the plurality of second stage switches is an INFINIBAND switch.

20. (New) The computer-readable medium of claim 13, wherein each of the plurality of first stage switches is an INFINIBAND switch and each of the plurality of second stage switches is an INFINIBAND switch.

21. (New) The computer-readable medium of claim 13, further comprising instructions that, when executed by the processor, cause the processor to further perform the steps of:

recognizing if a new node, a new switch, or both is added to the network; and

executing a rearrangement algorithm for the network in response to recognizing the new node, the new switch, or both.